



# ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION:	Trent 1000-K2	BYPASS RATIO:	9.0
UNIQUE ID NUMBER:	12RR068	PRESSURE RATIO ( $\pi_{co}$ ):	46.1
COMBUSTOR:	Phase5 Tiled		
ENGINE TYPE:	TF	RATED THRUST ( $F_{oo}$ ) (kN):	350.9

### REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
D <sub>p</sub> /F <sub>oo</sub> (g/kN) or SN	0.0	9.1	70.5	6.5
AS % OF ORIGINAL LIMIT	0.2	7.7	53.3	38.7
AS % OF CAEP/2 LIMIT (NO <sub>x</sub> )			66.7	
AS % OF CAEP/4 LIMIT (NO <sub>x</sub> )			71.1	
AS % OF CAEP/6 LIMIT (NO <sub>x</sub> )			77.3	
AS % OF CAEP/8 LIMIT (NO <sub>x</sub> )			85.7	

### DATA STATUS

- PRE-REGULATION  
 x CERTIFICATION  
 - REVISED (SEE REMARKS)

### TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES  
 x DEDICATED ENGINES TO PRODUCTION STANDARD  
 - OTHER (SEE REMARKS)

### EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE  
 (ANNEX 16 VOLUME II)

### CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)  
 x OUT OF PRODUCTION (DATE: - )  
 - OUT OF SERVICE (DATE: - )

### MEASURED DATA

MODE	POWER SETTING (%F <sub>oo</sub> )	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO <sub>x</sub>	
TAKE-OFF	100	0.7	2.663	0.00	0.43	58.04	3.9
CLIMB OUT	85	2.2	2.173	0.00	0.49	43.07	3.6
APPROACH	30	4.0	0.696	0.00	0.62	14.06	4.1
IDLE	7	26.0	0.254	0.02	6.80	5.91	0.5
LTO TOTAL FUEL (kg) or EMISSIONS (g)			962	9	2984	23531	-
NUMBER OF ENGINES				4	4	4	4
NUMBER OF TESTS				8	8	8	8
AVERAGE D <sub>p</sub> /F <sub>oo</sub> (g/kN) or AVERAGE SN (MAX)				0.0	8.5	67.1	6.0
SIGMA (D <sub>p</sub> /F <sub>oo</sub> in g/kN, or SN)				0.0	2.3	1.0	2.3
RANGE (D <sub>p</sub> /F <sub>oo</sub> in g/kN, or SN)				0-0.07	5.71-11.08	66.09-68.25	3-8.3

### ACCESSORY LOADS

POWER EXTRACTION	0	(kW)	AT	-	POWER SETTINGS
STAGE BLEED	0	(% CORE FLOW)	AT	-	POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	284.1-293.2
ABS HUMIDITY (kg/kg)	0.00432-0.00968

### FUEL

SPEC	
H/C	1.9
AROM (%)	17.4

MANUFACTURER: Rolls-Royce plc  
 TEST ORGANIZATION: Rolls-Royce  
 TEST LOCATION: Derby  
 TEST DATES: 24/09/2009-03/08/2012

### NO<sub>x</sub> REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

### REMARKS

1. Representative of Package C1 engines
2. DNS183412
3. Certification in accordance with Part III, Chapter 2, of Amendment 7 of ICAO Annex 16 Vol. II.
4. NO<sub>x</sub> levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

Compliance with Fuel Venting requirements: x ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)